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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,576	06/24/2003	Hiroki Murakami	12054-0018	8220
22902	7590	05/14/2007		
CLARK & BRODY 1090 VERMONT AVENUE, NW SUITE 250 WASHINGTON, DC 20005			EXAMINER SPEER, TIMOTHY M	
			ART UNIT 1775	PAPER NUMBER
			MAIL DATE 05/14/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/601,576

**Applicant(s)**

MURAKAMI ET AL.

**Examiner**

Timothy M. Speer

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/20/07 has been entered.

### ***Claim Rejections - 35 USC § 102/103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 15-19 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tamatsuka (USPN 6,413,310)
3. Tamatsuka teaches a CZ silicon single crystal wafer wherein a density of COPs (crystal originated particles) having a size of 0.09 microns or more on the surface is  $1.03 \text{ COPs/cm}^2$  (abstract). Tamatsuka further teaches that the wafer has a nitrogen concentration of  $1 \times 10^{10}$  to  $1 \times 10^{15} \text{ atoms/cm}^3$  (see claim 13). Tamatsuka also teaches that the oxygen concentration is 18 ppm or less (see claim 19). Since the wafer of Tamatsuka has all of the claimed structural characteristics, it is the Examiner's position that the wafers will exhibit the claimed COP density even after repeated cleaning. It has been held that where the claimed invention and prior art products are identical or substantially identical in structure or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed

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structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 195 USPQ 430, 433. With regard to the process limitations recited in the present claims, process limitations in product claims are generally not dispositive unless it is shown that the recited process limitations product a product materially different than the applied prior art. MPEP 2113. In the present case, applicant has failed to adduce such evidence.

4. Moreover, with respect to the recited limitation that the wafer has a low density "along an entire thickness," it is the Examiner's position that this limitation is inherent in the applied prior art. Applicant argues that the recited limitation is a result of the recited process limitations regarding hold time. The Examiner notes that Tamatsuka teaches that COPs may be reduced by employing such hold times, see Tamatsuka (the '310 patent) at col. 10, lines 35-48, for instance. Thus, since the inclusions of Tamatsuka are reduced, the articles have "low density" throughout the thickness, as presently claimed.

5. Claims 15-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over WO 00/12786.

WO 00/12786 teaches a CZ silicon single crystal wafer wherein a density of COPs (crystal originated particles) having a size of 0.09 microns or more on the surface is 1.03 COPs/cm<sup>2</sup> (abstract). WO 00/12786 further teaches that the wafer has a nitrogen concentration of 1x10<sup>10</sup> to 1x10<sup>15</sup> atoms/cm<sup>3</sup> (see claim 13). WO 00/12786 also teaches that the oxygen concentration is 18 ppm or less (see claim 19). Since the wafer of WO 00/12786 has all of the claimed structural characteristics, it is the Examiner's position that the wafers will exhibit the

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claimed COP density even after repeated cleaning. It has been held that where the claimed invention and prior art products are identical or substantially identical in structure or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 195 USPQ 430, 433. With regard to the process limitations recited in the present claims, process limitations in product claims are generally not dispositive unless it is shown that the recited process limitations product a product materially different than the applied prior art. MPEP 2113. In the present case, applicant has failed to adduce such evidence.

Moreover, with respect to the recited limitation that the wafer has a low density "along an entire thickness," it is the Examiner's position that this limitation is inherent in the applied prior art. Applicant argues that the recited limitation is a result of the recited process limitations regarding hold time. The Examiner notes that Tamatsuka teaches that COPs may be reduced by employing such hold times. Thus, since the inclusions of Tamatsuka are reduced, the articles have "low density" throughout the thickness, as presently claimed.

### ***Response to Arguments***

6. Applicant's arguments filed 02/20/07 have been fully considered, but are not found to be persuasive.

7. Applicant argues that the articles of Tamatsuka do not have a low density of COPs along a thickness direction, as presently claimed. For reasons above, this is not persuasive. Tamatsuka

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teaches that COPs may be reduced by controlling the cooling rate of the manufacturing process, as is done in the present application. Accordingly, the articles of Tamatsuka will have a "low density" of COPs in the thickness direction, as presently claimed.

8. In light of the above, applicant's arguments filed 05/19/06 have been fully considered, but are not found to be persuasive.

### *Conclusion*

9. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy M. Speer whose telephone number is 571-272-8385. The examiner can normally be reached on M-Th, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Timothy M. Speer



JENNIFER MCNEIL  
SUPERVISORY PATENT EXAMINER  
5/10/7